

Abstract

A demultiplexer for an optical time-division multiplexed digital signal, which has a signal wavelength  $\lambda_s$  and is transmitted with a bit rate  $B$ , is described. It comprises a Raman active optical medium, a pump source for generating a periodic optical pump signal having a pump wavelength  $\lambda_p$  and a periodicity of  $B/n$  where  $n$  is an integer  $\geq 2$ , and a coupler for coupling the digital signal and the pump signal into the Raman active optical medium. The new demultiplexer exploits the non-linear Raman gain response of the Raman active medium to a high power pump signal and has a narrow time window and a high extinction ratio.